TO:	Bob Miley/OZ	(281) 244-8261
NASA Contact:	Larry Walter/ER3	(281) 483-5591
Analyst:	John Bussell/MAGIK Team	(281) 244-7934
DATE:	May 16, 2001	**Action Item #: 1321**
RE:	AMS 6 Gauss Keep Out Zone	
CC:	Gene Cook/OZ, Skip Hatfield/OM7, RS Library	
PAGES:	6 total	

The MAGIK Team has assessed the Mobile Servicer System (MSS) movement into a six Gauss magnetic fringe field surrounding the Alpha Magnetic Spectrometer (AMS). The six Gauss box is defined in ISS Electromagnetic Effects Panel Tailoring/Interpretation Agreement (EMEP TIA) # 0310, Rev F.

After modeling the box according to the numbers in EMEP TIA # 0310, it was found that a small portion of structural support on the Mobile Transporter (MT) will enter the envelope when translating near the AMS. Figures 1 through 4 show the box and its location on the truss. Figures 3 and 4 show that part of the MT is inside the box, but that the Special Purpose Dexterous Manipulator (SPDM) based on the Mobile Base Servicer System (MBS) is not. The Space Station Remote Manipulator System (SSRMS), when based on the MBS, will also not enter the box. However, it should be noted that the SSRMS will enter the box if the Express Pallet (EXP) next to the AMS needs to be removed, as the EXP is completely enclosed by the envelope.

As previously noted, the SPDM based on the MBS does not enter the AMS six Gauss envelope, but in the case of SPDM extraction/replacement of S1/S3 Orbital Replaceable Units (ORUs), the SPDM will have to violate the box. Figure 4 shows the SPDM approach envelope to grasping a stabilizing H-Handle on the truss. One SPDM arm must use the H-Handle to stabilize itself while extracting/replacing an ORU with its free arm. Both S1 H-Handle #2 and S3 H-Handle #2 are inside the AMS envelope. Figure 5 shows the ORUs and H-Handles that are SPDM compatible. Drawings 1F71623 and 1F71667 outline analysis performed by Boeing Huntington Beach EVA and show which H-Handles are used to extract/replace specific ORUs. The list below summarizes which ORUs are accessed using the H-Handles in the AMS envelope:

S1:

RPCMs 1-8 (ISS Nadir)
DDCU
RJMC #2 (ISS Nadir)
MDM #5 (ISS Nadir)

S3:

MDMs 1 and 2
RPCMs 1-8
MT Stop

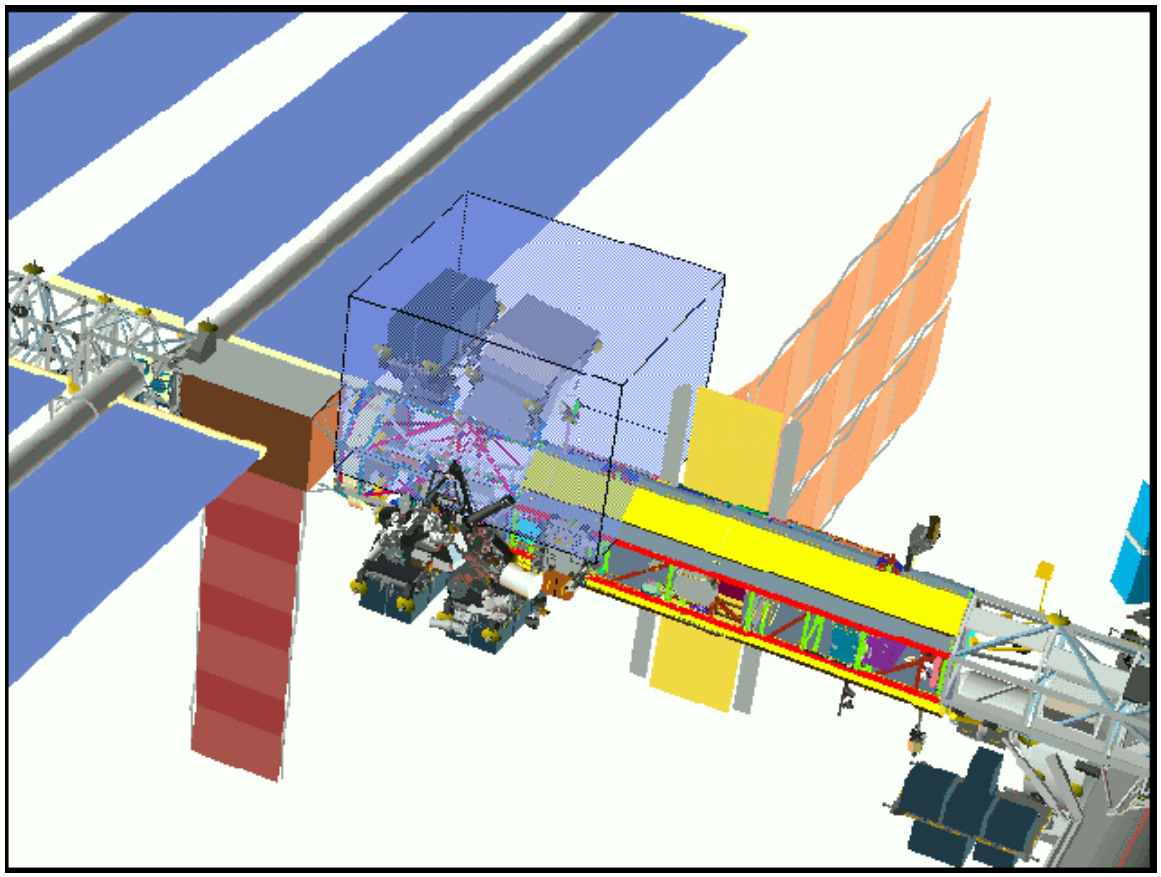

Figure 1 – AMS 6 Gauss Box – Iso View Looking ISS Starboard-Aft

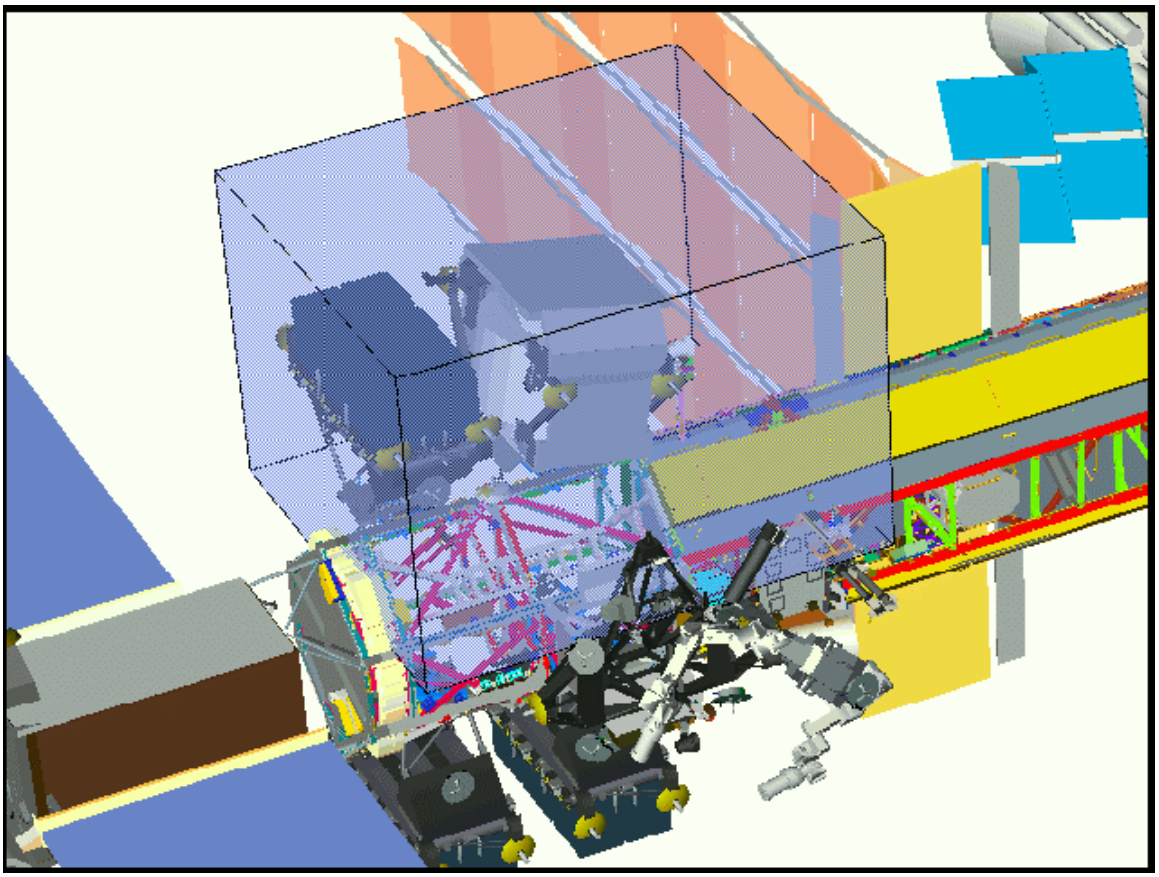

Figure 2 – AMS 6 Gauss Box – Iso View Looking ISS Port-Aft

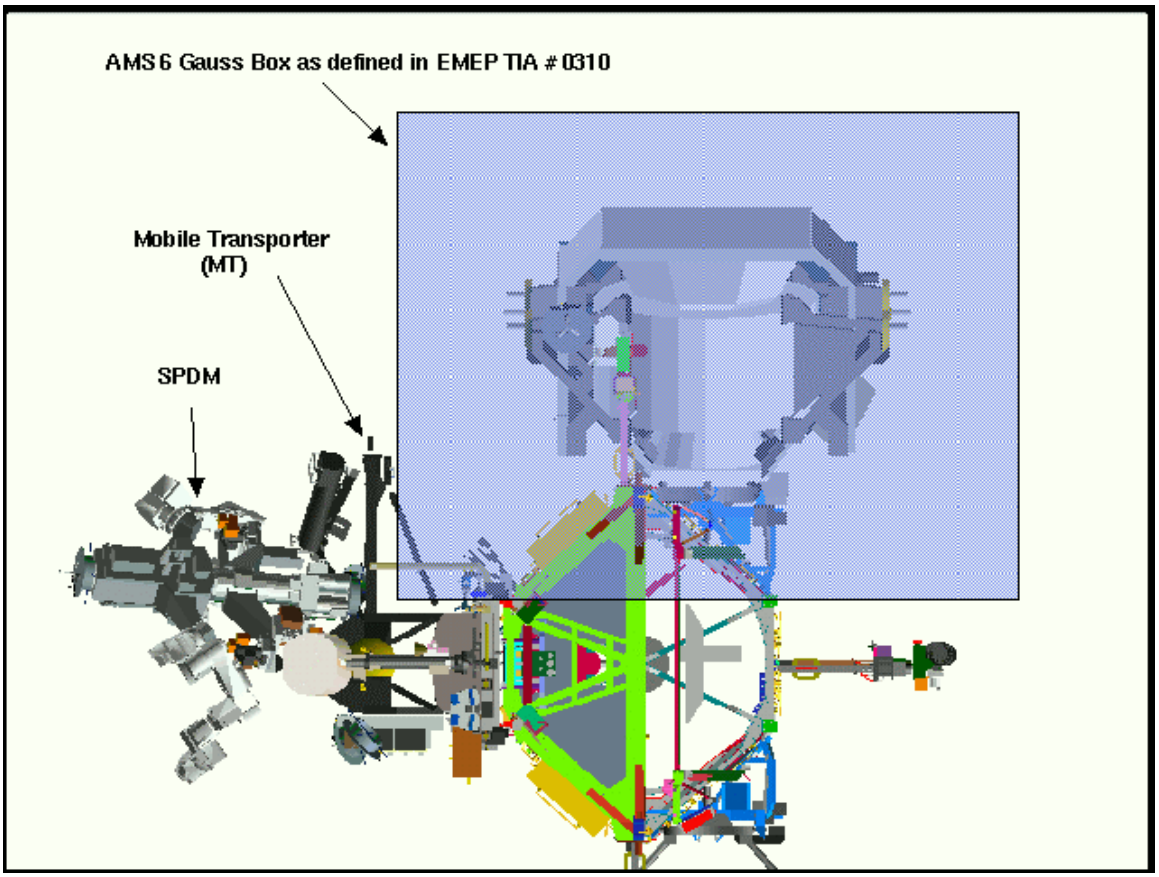

Figure 3 – AMS 6 Gauss Box and MT – ISS Port View

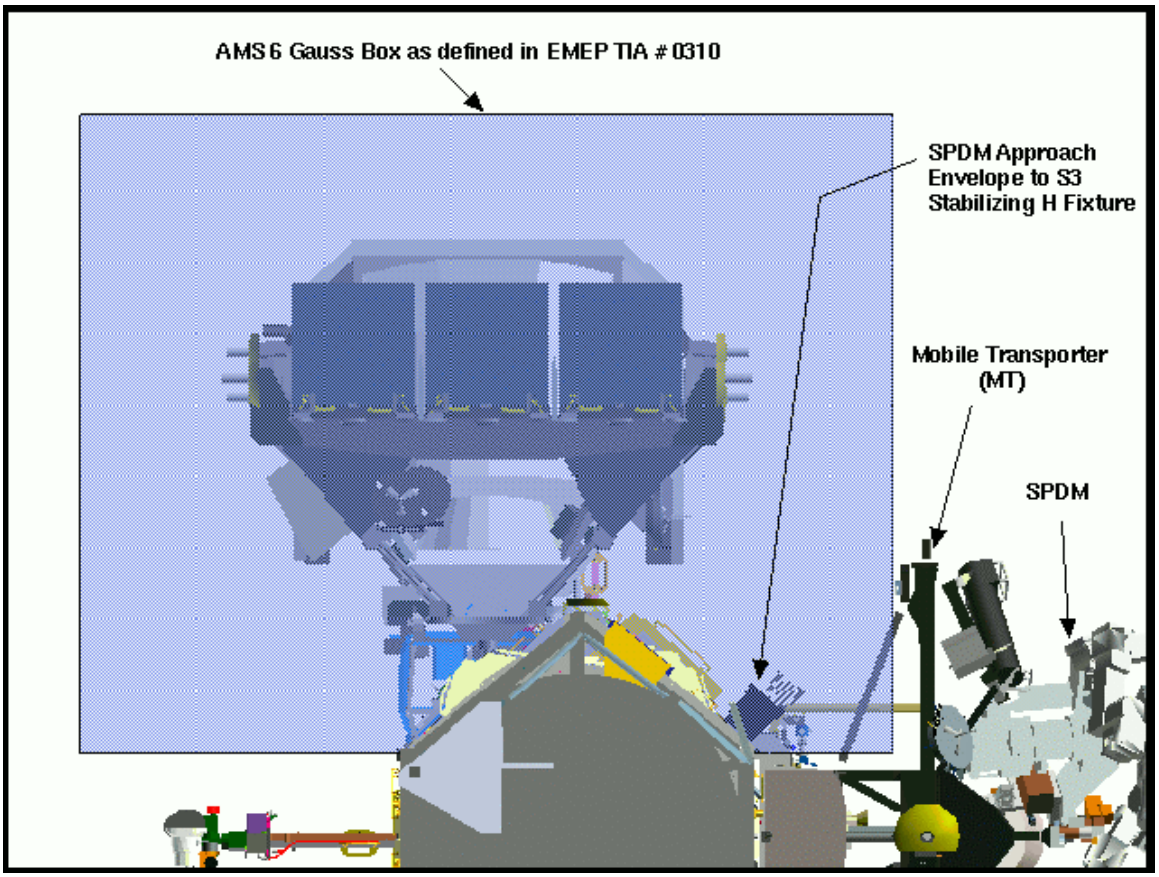

Figure 4 – AMS 6 Gauss Box and MT – ISS Starboard View

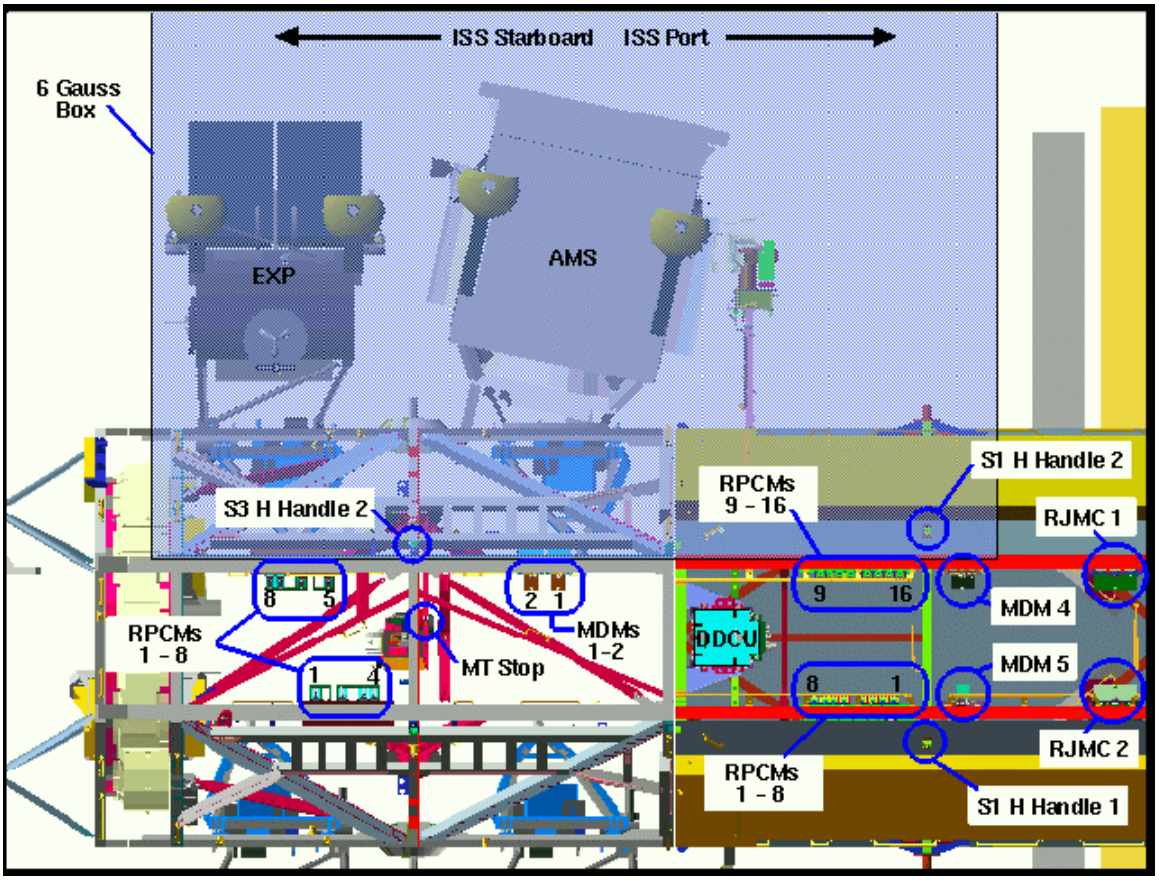

Figure 5 – S1 and S3 Truss ORUs – ISS Front View